

What is claimed is:

1. A ferroelectric random access memory (FeRAM) device,
comprising: *Fig 2 or 5*

5 a plurality of memory cells arranged in an $M \times J$ matrix, wherein
 M is a positive integer more than three and J is a positive integer;
a number of reference cells connected to each column of the
memory cells; and *Fig 1*

10 a cell selection means for selecting a memory cell in response
to address signals from an external circuit and selecting a
reference cell corresponding to the selected memory cell.

Col 1 lin 5 col 2 l. 10, cl 3 l. 36-54

15 2. The FeRAM device as recited in claim 1, wherein the number
of memory cells of each column is $M = 2^N$ and the number of reference
cells is N .

2
3. The FeRAM device as recited in claim 1, wherein said cell
selection means includes:

20 a memory cell selection circuit connected to the memory cells
via word lines for generating a memory cell selection signal in
response to the address signals to select a corresponding memory
cell; and

25 a reference cell selection circuit connected to the reference
cells via reference word lines for generating a reference cell
selection signal to select the corresponding reference cell.

3

4. The FeRAM device as recited in claim *2* 3, wherein said memory

cell selection circuit includes:

a plurality of NAND gates, each NAND gate for receiving address signals from an external circuit to perform NAND logical operation; and

5 a plurality of inverters, each inverter for inverting an output signal of each NAND gate to generate the memory cell selection signal.

4
3. The FeRAM device as recited in claim 2, wherein said
10 reference cell selection circuit includes:

a plurality of NAND gates, each NAND gate for receiving address signals from an external circuit to perform NAND logical operation; and

a plurality of inverters, each inverter for inverting an
15 output signal of each NAND gate to generate the reference cell selection signal.

5
6. The FeRAM device as recited in claim 1, wherein the number
of the memory cells is 2^8 and the number of the reference cells
20 is eight.

6
7. The FeRAM device as recited in claim 3, wherein each NAND
gate of said memory cell selection circuit has eight input
terminals.

7
8. The FeRAM device as recited in claim 4, wherein each NAND
25 gate of said reference cell selection circuit has three input

terminals.

8
9. The FeRAM device as recited in claim 1, wherein said memory
cells have one transistor and one ferroelectric capacitor,
5 respectively.

9
10. The FeRAM device as recited in claim 1, wherein said
reference cells have one transistor and one ferroelectric
capacitor, respectively.

10
11. The FeRAM device as recited in claim 1, wherein said memory
cells are connected to first bit line.

11
12. The FeRAM device as recited in claim 11, wherein said
15 reference cells are connected to second bit line.

12
13. The FeRAM device as recited in claim 12, wherein said
memory cells and said reference cells shares a cell plate, wherein
the cell plate is positioned between the first bit line and the
20 second bit line.